

AMENDMENT UNDER 37 CFR § 1.111
Serial No. 10/760,290

AMENDMENTS TO THE SPECIFICATION

Please amend the Specification as follows:

[0036] To approach to the evanescent field of the core mode the thickness of the cladding was reduced by chemical etching using hydrofluoric (HF) acid solution. The thickness of the cladding was controlled by the concentration of solution and by the etching time. The etched fiber is inserted between two glass plates separated by a gap of 15-30 μm . The inner surfaces of glass plates are deposited with transparent electrodes (indium tin oxide). The system is treated to ensure that the liquid crystal molecules are initially oriented parallel to the direction of fiber axis. The space between glasses is filled with a CPLC material (see Fig. 2). Because of orientational ordering of rodlike molecules, nematic liquid crystal is uniaxially symmetric (with two principal refractive indices n_o and n_e) with the axis of symmetry parallel to average orientation of the axes of molecules (director). The ordinary refractive index n_o corresponds to light with electric field polarization perpendicular to the director and extraordinary refractive index n_e for the light with electrical field polarization parallel to the director. Applying external voltages one can control the ordering and the orientation of liquid crystal molecules and therefore their refractive index. The birefringence of composite liquid crystal materials can reach rather high values $\Delta n = n_e - n_o \approx 0.2$. To ~~unsure~~ensure that the core mode is guided, the refractive index of the electro-optic material must be always less than the effective refractive index of the core mode n_{eff} . For practical applications the refractive index of CPLC should always stay lower than the refractive index of the cladding material. There are several different molecular orientation configurations that can be applied to this device (see ~~our previous patent application No. 9-15497-2US.~~ for example, Applicant's co-pending United States Patent Application No. 10/237,622). We will consider one of these geometries as an example. In the initial state the CPLC molecules are aligned parallel to the fiber and to the surfaces of the electrode plates. When a voltage is applied to the electrodes the CPLC molecules are forced to align parallel to the electric field.